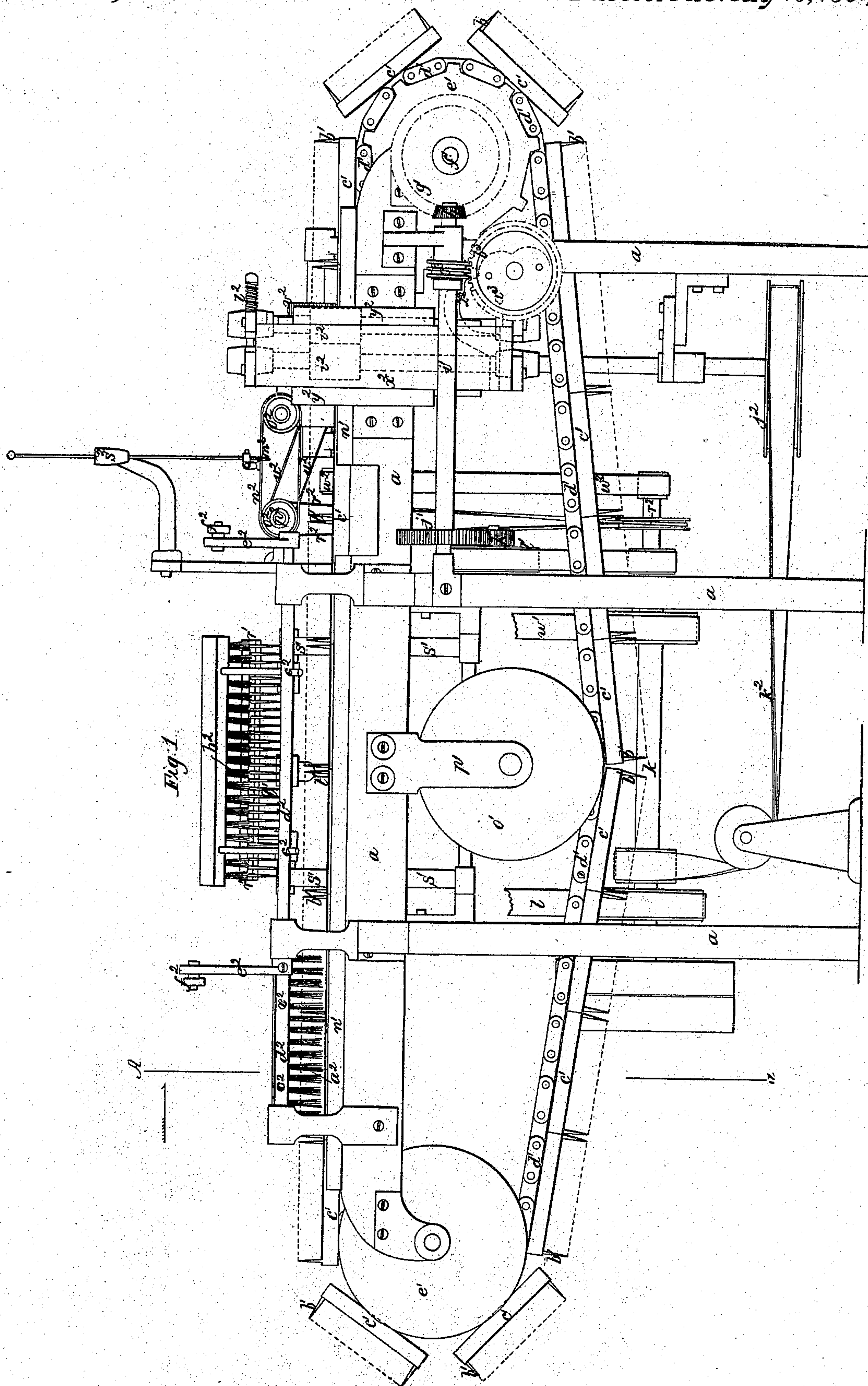


Patented May 16, 1854.



*C. G. Sargent,
Combing Machine.*

3 Sheets. Sheet 2.

N^o 10,913.

Patented May 16, 1854.

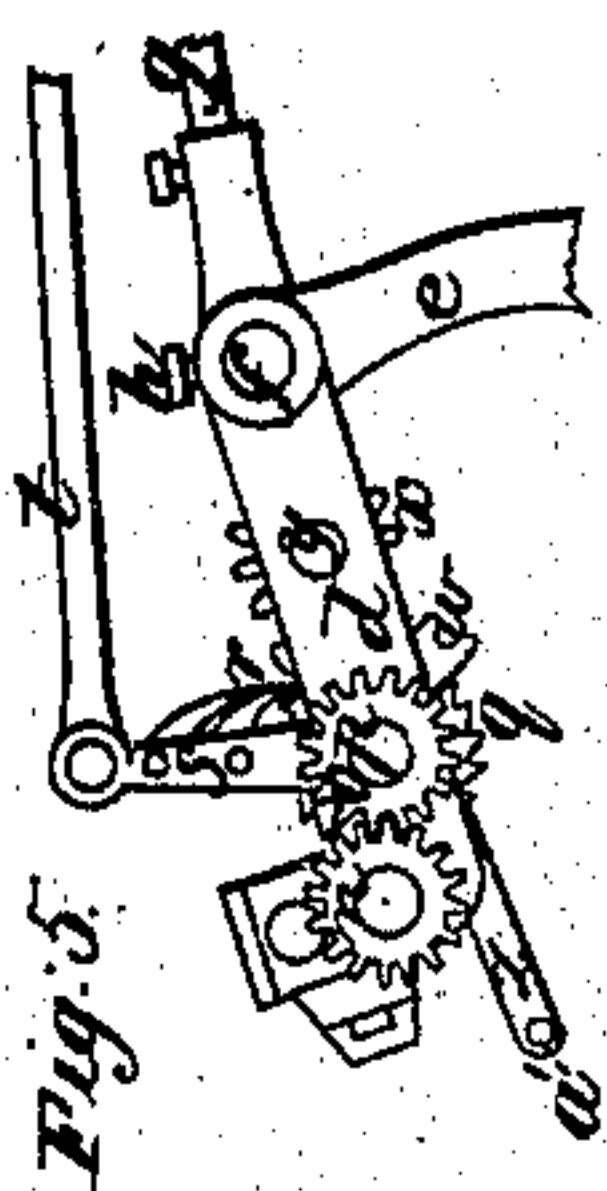
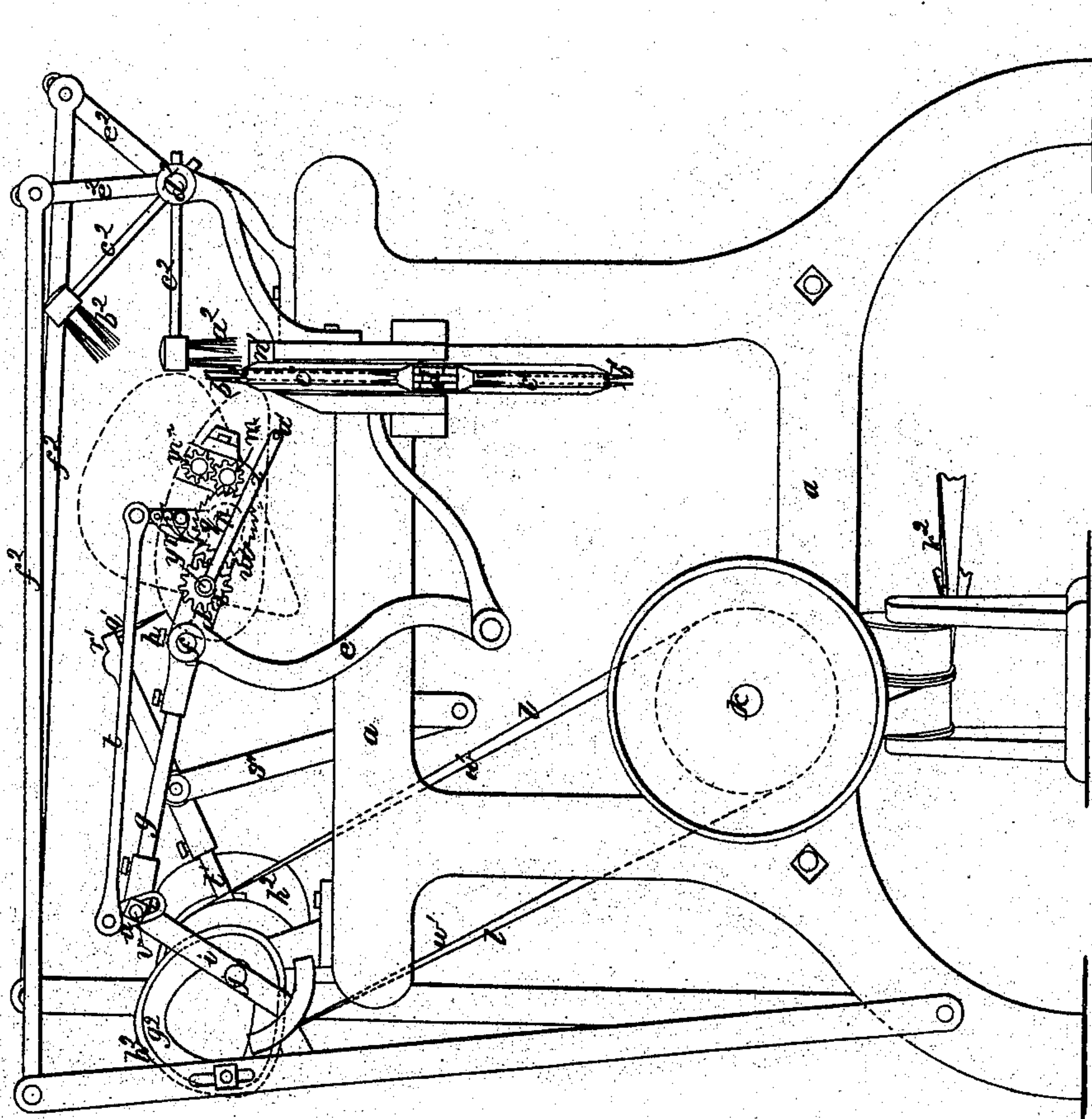


Fig. 2.



C. G. Sargent,
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Fig. 4. A, a.

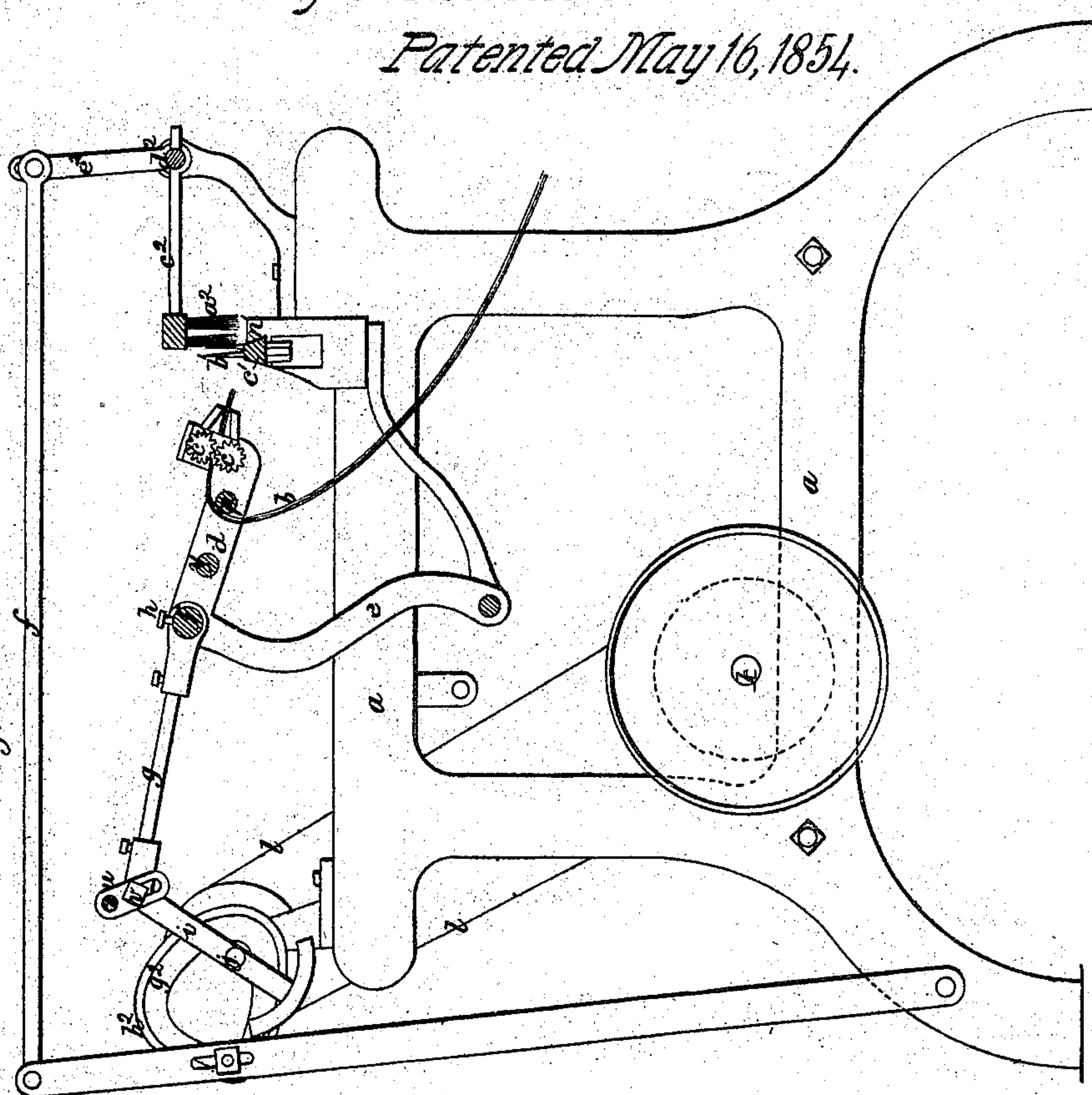
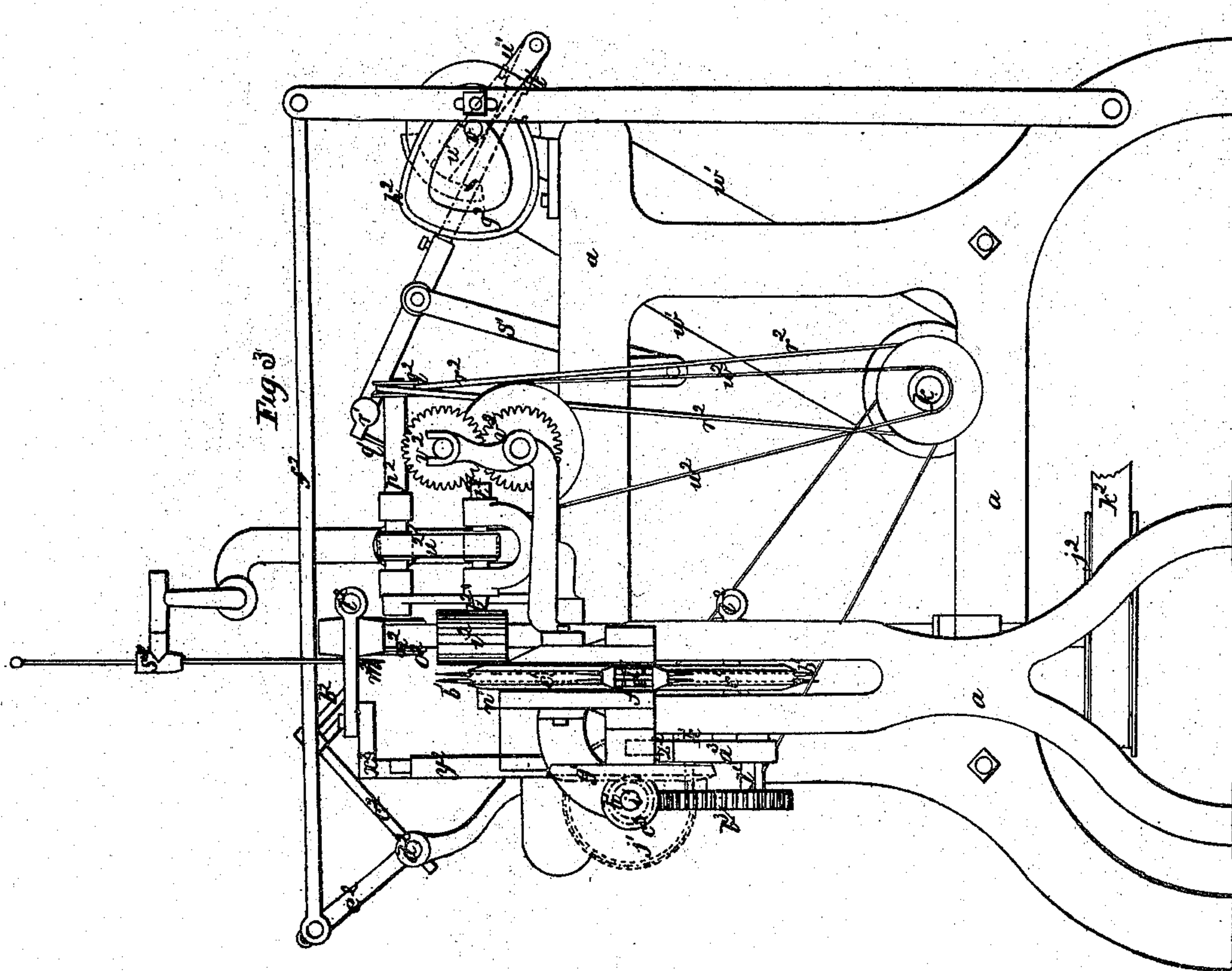


Fig. 5.



UNITED STATES PATENT OFFICE.

CHARLES G. SARGENT, OF LOWELL, MASSACHUSETTS.

MACHINERY FOR COMBING WOOL.

Specification of Letters Patent No. 10,913, dated May 16, 1854.

To all whom it may concern:

Be it known that I, CHARLES G. SARGENT, of Lowell, Massachusetts, have invented certain Improvements in Machines for Comb-
5 ing Wool and other Fibrous Substances, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

10 Figure 1, is a front elevation; Fig. 2, an elevation of the feeding end; Fig. 3, an elevation of the opposite end; Fig. 4, a section taken at the line A, *a* of Fig. 1; Fig. 5, an elevation of the inside of the frame carry-
15 ing the feed rollers.

The same letters indicate like parts in all the figures.

In my improved machine there is one or two rows of teeth on which the wool to be
20 combed is lapped, and these teeth are attached by sectional bars to the links of an endless chain passing over rollers or wheels, and in the upper part of their course guided so as to move slowly in a straight line to
25 receive the fibers of wool from a feeding apparatus, thence carry it along in front of a combing apparatus and then to a pair of rollers which draw off the combed fibers to form a sliver.

30 My invention consists in lapping the wool as it is fed forward through feed rollers, by giving to the frame which carries the feeding apparatus, a motion derived from a crank at or near one end or the equivalent
35 thereof and having the frame jointed to vibrating rods or rockers, so that the feeding apparatus shall gradually move toward the range of comb teeth, and then gradually descend to lap the fibers onto the teeth of the
40 main comb, and then recede therefrom, and again rise preparatory to a repetition of the operation.

My invention also consists in combining with the lapping feed rollers, a rod placed
45 in front of and parallel therewith, which rod is connected with the feeding apparatus and has a motion, relatively thereto, upward, as the rollers advance the fibers of wool to lift them up, and, after they have been
50 lapped onto the comb teeth, a downward motion, to separate the fibers on the main comb teeth from those in the bite of the feed rollers.

My invention also consists in combing the wool after it has been lapped onto the teeth
55 of the main comb by a mechanical comb having a motion such as is given to the lap-

ping feed rollers, or any other motion substantially the same and given by equivalent means.

My invention also consists in combin- 60
ing with the lapping feed rollers and comb, or either of them, and with the teeth of the main comb, a brush or brushes to hold the fibers of wool on the main comb teeth during the lapping and combing operation, or 65
either, to prevent the fibers of wool from being drawn out of the main comb teeth, for if they be not so held by the brush the fibers which are not hung on the main comb teeth by the middle of their length will be drawn 70
out the moment one end is liberated by the lapping rollers or working comb.

My invention also consists in giving an intermittent motion to the feed rollers, that they may feed forward the required quan- 75
tity of wool before each lapping motion and remain at rest during the lapping and drawing action.

My invention also consists in combining with the main comb and condensing appa- 80
ratus, the employment of a vibrating finger, having a motion such as would be given by having one end of the wire constituting such finger jointed to the edge of an endless belt passing around two rollers for the purpose 85
of carrying the fibers of wool that have been combed toward the rollers of the condensing apparatus and presenting them properly to the bite of such rollers, to insure the catching of the longest fibers first. 90

In the accompanying drawings *a*, represents a frame adapted to the purpose, and *b*, a sliver or bat of carded wool as it comes from the cards. This sliver or bat is presented to the bite of a pair of feed rollers 95
c, c, mounted on the forward end of a vibrating frame *d*, which near its rear end is jointed to two rockers *e, e*, by a rod bar *f*. To this bar *f* of the frame is fitted one end of a connecting rod *g*, provided with a 100
temper screw *h*, by which the frame and connecting rod can be secured and the inclination relatively to the rod shifted to adjust the rollers relatively to the main comb to be presently described. The rear end of 105
the connecting rod takes hold of a crank *i* on a shaft *j* which receives motion from the driving shaft *k*, by a belt *l*.

The rotation of the crank imparts to the end of the frame carrying the feed rollers, 110
by virtue of the rockers *e, e*, a motion represented by the dotted line, so that the rollers

shall move toward the main comb teeth, then downward to lap the wool onto the said teeth, and then back nearly in a straight line to separate the fibers held in the bite of the rollers from those lapped onto the teeth of the main comb.

The feed rollers are geared together at one end by cog wheels m m in the usual manner, and the lower roller at the other end carries a cog wheel n , Fig. 5, which engages a wheel o , of the same size on an arbor p , mounted in a frame back of, and parallel with the feed rollers. At the opposite end this arbor carries a ratchet wheel q , the teeth of which are engaged by a spring ratchet hand r , on an arm s , which vibrates on the arbor, the upper end of the said arm being connected by a connecting rod t with the wrist of a small crank u , on the wrist pin v , of the crank i which imparts motion to the frame of the feed rollers. By means of the connections just above described an intermittent rotary motion is given to the feed rollers to give out the wool as the frame and rollers are receding from the teeth of the main comb, and to suspend the delivery or feed motion during the remaining part of the motion of the frame.

The arm s , that carries the ratchet hand is provided with a sector rack w , the cogs of which engage a cog wheel x , on an arbor y provided with an arm z , which carries on its outer end a rod a' , in front of, and parallel with the feed rollers, so that as the feeding apparatus is carried toward the main comb teeth, the rod shall be carried up to lift the fibers held by the rollers preparatory to the lapping action, and after the fibers have been lapped on the comb teeth then descend to separate the fibers on the comb teeth from those held in the bite of the feed rollers.

The main comb f' is composed of two rows of parallel teeth (more or less) secured to a series of bars c' , which are jointed about the middle of their length to the links of a chain d' , which passes around two wheels e' , e' , provided with side flanches which embrace the chain. One of the wheels e' turns freely and the other is on a shaft f' which carries a bevel cog wheel g' that receives motion from a pinion h' , on a shaft i' , that in turn receives motion by a cog wheel j , pinion k' , and band wheel l' , from the main driving shaft k .

The bars c' , that carry the comb teeth are maintained in a straight line along the upper part of their course by sliding on and against a bar n' , of the frame which is rabbeted for that purpose and which extend from one of the wheels e' , to the other. The inner face of this bar as also the face of the bars c' , are properly beveled or chamfered to leave a smooth surface. The bar n' , is also grooved to receive and guide the chain

which carries the bars c' , of the comb. The chain of combs below is guided by a wheel o' , the shaft of which is mounted in hangers p' , that are adjustable for the purpose of keeping the chain properly distended.

The wool, which is lapped by the feed rollers onto the teeth of the main comb, is gradually carried by the motion of the chain to, and in front of a working comb q' , by which the wool is properly combed.

The comb teeth project from a bar r' , attached to a frame jointed to the upper end of two rockers s' , s' , and from the rear part of this frame a rod t' , extends to a crank u' , on a crank shaft v' , as in the feeding apparatus and to give the comb a like motion. The crank shaft v' , receives motion from the main driving shaft by a belt w' .

The motion imparted to the comb resembles very much the motion given by hand to the comb in the operation of combing wool as represented by the dotted line in connection with the feeding apparatus.

In front of the chain of comb teeth there are two brushes a^2 , b^2 , one opposite the feeding lap rollers and the other opposite the working comb. As the motions of these two brushes and their purpose are alike the description of one will suffice—the same letters being applied to corresponding parts on the two. The bristles project from a bar or block attached by adjustable arms c^2 , with a rock shaft d^2 , and one end of the rock shaft has an arm e^2 , to which is jointed one end of a rod f^2 , the other end of the said rod being acted upon by a cam groove g^2 , on a cam wheel h^2 , on the end of the crank shaft. The form of the cam groove and its position relatively to the crank, are such that the brush in front of the feed rollers is brought down so that its bristles enter the teeth of the main comb to bear on the fibers of wool directly after they are lapped on by the feed rollers to hold them on the teeth as the feed rollers move back, and the brush in front of the working comb is brought down just before the working comb begins the combing action and the bristles remain down to hold the fibers where they are lapped around the main comb teeth to prevent the pull of the working comb from drawing the fibers out of the main comb. In this way it will be seen that if the end only of a fiber is lapped around the teeth of the main comb it will be held there until combed; but without the holding brush the fibers of wool would be often drawn out and wasted and none would remain to be thoroughly combed except such as chanced to be lapped and held in the main comb teeth by the middle of their length so that the combing action should have an equal pull on both ends.

After the fibers of wool, which hang on the main comb teeth, have passed the working comb, they are carried toward a pair of

vertical fluted rollers i^2, i^2 , which are placed near to the main comb. The shaft of one of these rollers, runs in fixed boxes and carries a pulley j^2 , which receives motion from a band k^2 , from a pulley on the main driving shaft. And the shaft of the other roller runs in movable boxes provided with helical springs j^2, j^2 , the tension of which keep the two rollers properly in contact to bite the fibers of wool. The hanging fibers of wool, as the chain of combs moves along, are caught by these rollers and are stripped off from the comb teeth, but it is important to the proper operation of this part of the machine, that the rollers should catch the most projecting ends of the fibers first;—and for this purpose there is a wire finger m^2 , jointed near its lower end to an endless strap or chain n^2 , that passes around two rollers o^2, o^2 , one of which is a guide roller, and the other a driving roller, which latter is on a shaft p^2 , provided with a band wheel q^2 , that receives motion by a band r^2 from a pulley on the main driving shaft. The upper end of this wire finger m^2 slides freely in a swivel s^2 , so that as the endless band that carries this wire travels around at a greater velocity than the chain of combs the wire carried by it catches the fibers of wool and carries the loose ends that hang from the comb teeth forward toward the bite of the rollers, that the longest ends may be first caught by the rollers and drawn from the comb teeth, and so in succession all the fibers of sufficient length are drawn off and formed into a sliver, and delivered by the rollers to a condensing tube t^2 which receives motion by a band u^2 , from a pulley on the shaft p^2 of the roller which carries the band for operating the wire finger.

The condensing tube delivers the sliver to a pair of fluted rollers v^2, v^2 , which receive motion from the main driving shaft by a strap w^2 .

The boxes of the rollers i^2, i^2 , are attached to a frame or plate x^2 , which slides vertically in ways y^2 , so that the frame and its rollers are free to move up and down, and this frame or plate is provided with an arm z^2 , the end of which rests on the periphery of a cam a^3 , attached to a cog wheel b^3 , which receives motion from a worm c^3 on the shaft which communicates motion to the chain of combs. The form of this cam is represented by dotted lines in Fig. 1—and the object is to give a slow up-and-down motion to the rollers as they draw the fibers from the teeth of the main comb to insure the catching of all the fibers which are of sufficient length.

Instead of the above arrangement of the working comb I contemplate attaching the comb to the side of the vibrating frame of the feeding apparatus where it will receive a like motion but I prefer the mode first

described. And I wish it also to be understood that the required heat can be applied to this machine, if desired, in any appropriate manner by means of steam pipes, or by making some parts of the machine hollow for this purpose.

Having thus described my invention and the mode of construction which I have tried with success, what I claim as my invention and desire to secure by Letters Patent is—

1. Giving to the feeding apparatus the lapping motion, substantially as specified by the crank and rockers or their equivalents for lapping the fibers of wool onto the teeth of the main comb, as specified.

2. I also claim in combination with the feed rollers operated substantially as specified, the employment of the lifting rod for lifting the fibers preparatory to lapping them onto the teeth of the main comb, and then separating them substantially as specified.

3. I also claim in combination with the continuous chain of main comb teeth on which the fibers of wool are lapped, a working comb which is operated by a peculiar motion like that given to the lapping rollers by having the said working comb attached to, and carried by, a frame operated at one end by a crank, or the equivalent thereof, and jointed to vibrating rods or rockers, substantially as specified.

4. I also claim in combination with the main comb teeth and with the lapping feed rollers and the working comb substantially as specified the employment of a brush or brushes substantially as described for holding the fibers of wool after they have been lapped onto the main comb teeth to prevent them from being drawn out before they are combed as described.

5. I also claim in combination with the endless chain of comb-teeth constituting the main comb, the vibrating finger operated substantially as described to direct the fibers of wool after they have been combed to the rollers which draw them off and deliver them to the condensing apparatus as described.

6. I also claim giving to the feed rollers an intermittent rotary motion substantially as specified that the required quantity of wool may be fed forward for each lapping motion and then stop during the pulling or separating as specified.

7. And finally I claim, giving to the rollers of the condensing apparatus, which strip the fibers of wool from the teeth of the main comb, a slow vibrating motion in the direction of their axes, as specified.

CHAS. G. SARGENT.

Witnesses:

ITHAMAR W. BEARD,
DANIEL J. MURPHY,
DAVID P. BARSTOW.